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The Nutrition of Animals, and the Veterinary Profession.*

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Mr. President and Gentlemen: In the first place I wish to thank you for the honour you have done me by inviting me to contribute a paper dealing with animal nutrition at this joint meeting. I appreciate the honour all the more because it is in the West of Scotland that the dairying industry has made so much progress, which has been due, very largely at least, to the successful and economical manner in which the western dairymen feed their cattle. I have no apology to offer for the subject of the paper, because the result of some years of study of problems dealing with animal nutrition has been the impress on my mind of the very great importance of scientific and economic stock feeding, not only to the owners of animals and to our profession, but also to the State as a State.

I do not know of any branch of farming that is attracting so much attention at the present time as the feeding of live stock. This is not altogether surprising, because, apart from the financial loss inseparable from erroneous feeding (that is, the simple waste of food), I venture to suggest that if you look to your case books you will find that errors of nutrition of one kind and another are responsible for a great many of your calls. You will admit that the basis of successful stock-keeping is sound and economical feeding. While it is true that neither the dairyman nor other owner of stock can be successful in their calling unless they study the nutrition of their animals very closely, it is not one whit less true that, when dealing with diseases due to errors of diet, the success of the veterinary surgeon will depend upon his knowledge of the feeding of animals in health.

The problems dealing with animal nutrtion that the general practitioner comes across in a busy practice are truly varied. Some of these are extremely difficult and their solution elusive; others, again, are simple and, indeed, at times border on the ludicrous, as witness the pig-feeder who gorged his pigs on hard-boiled eggs, and the Edinburgh hawker who fed his unfortunate horse, if feeding it can be called, on dried banana leaves culled from packing cases.

*Read at a joint meeting of the Scottish Metropolitan and West of Scotland Divisions, February 16th, 1924.

But it is of the more difficult problems that I wish to speak to-day and of the new aspects of nutrition that have come up for our consideration.

I think that, without any difficulty, we can divide our stock-owning clients into three groups:—(1) The intelligent, progressive farmer; (2) the rule-of-thumb man, who believes that because his grandfather did something in a certain way that it must be right, and who scorns research with a loftiness that is somewhat marred by his own stupidity; and (3) the post-war smallholder, pig-breeder or poultry keeper. The second type is not likely to go to the veterinary surgeon for recent information concerning animal nutrition, nor, for that matter, to anybody else. He does, however, come to us to have his sick animals cured, but resents very much being told that his animals would not, in many cases, have been sick at all if he had fed them properly. The third type is usually represented by an unfortunate man who has been left stranded by the war, and who has turned to pig or poultry rearing for a living, without having any previous practical knowledge or, what is of more importance, any animal sense. He has usually garnered some scratchings of so-called scientific knowledge, and talks glibly of "albuminoid ratios" and other complex subjects, the fundamental importance of which he has but the glimmer of an idea. He feeds, or thinks he feeds, on "standard" rations, which not infrequently are misleading, and he is of the opinion that stock feeding is merely the application of mathematics. Unfortunately, he often makes a hopeless mess of things, and asks his veterinary surgeon or somebody else what is wrong with his ratios, and why the standards so carefully laid down in the book have failed. Questions such as these were not put to the veterinary surgeon twenty years ago.

With regard to the first group of farmers, nobody in recent years can have failed to have been impressed by the extraordinary interest that is being taken by these men in the feeding of their stock, as witness the columns devoted each week in agricultural papers to answering queries on feeding, and as shown also by the undoubted success of the food-advisory section of the milk-recording societies. The progressive stock-owner of to-day is becoming very much alive to the necessity of feeding his animals both well and economically. He has also had plenty of proof that what may be called the theory and science of animal nutrition is capable of a very practical and profitable application. He knows perfectly well that other

countries have paid far more attention to this science than we have, and are as a result doing better, *e.g.*, Denmark, with her standardised bacon pigs and her economic dairy herds. In consequence, the progressive farmer, who to-day is rather worried, is anxious to obtain all the advice he can which will help him to feed his animals at less expense. He may go to the agricultural papers for this advice, he may appeal to an agricultural chemist, and often does, or he may go to his veterinary adviser, rightly thinking that he who has helped him out of many other difficulties may be able to explain some problem that he has heard discussed in the market, or has read in the agricultural press.

Now what sort of questions is he likely to ask? Much of the information that he seeks has been acquired in very recent years; take, for example, the economic feeding of dairy herds. Feeding the cow according to the quantity and quality of the milk she yields is a comparatively recent and certainly a most profitable undertaking. The producer of tubercle-free and clean milk, apart from his high ideal of what is fit and proper in the production of milk, quite rightly expects to get some financial gain for all his trouble. This he can only do by avoiding waste. The financial success of clean milk production depends, as you gentlemen know very well, upon the elimination of the "guest" cow and on the economic feeding of the producing cows. The dairy farmer, therefore, wishes to know how to feed his cows cheaply, avoiding waste, and also how to feed them so as to get good milk and at the same time to keep them in good health and with unimpaired breeding capacity. With heavy milking cows this is, as you know, a much more difficult matter than it was years ago with the ordinary cow which gave less milk and was kept under more natural conditions.

Inseparable from economic feeding is the question so very often asked—What is the value of a certain food? Of two foods which is the better value for the money? A dairy farmer is offered, let us say, decorticated ground nut cake at £13 and palm kernel cake at £7 10s. per ton. He wants to know which he should buy. A contractor with a big stud of horses is offered maize at £10 per ton and oats at £11 per ton. Which, he asks you, is the better value? To give the correct answer to a question of this nature is not a simple matter. To give an adequate reply the veterinary surgeon must know the exact purpose for which the farmer proposes to buy the food. I always explain this point to my students by saying that a telephone in the office of a busy merchant is absolutely indispensable—his business would fail without it; but a telephone installed in the house of a charlady would be worse than useless, as she would have to bear the expense of the upkeep without any compensating return. So you will understand that the value of a food depends upon the use made of it. For example, the inclusion of a pound or so of decorticated ground nut cake, a very highly nitrogenous food, in the ration of a heavy milking cow, where the rest of the diet is chiefly carbonaceous in character, would convert a bad ration into a good ration. It would make all the difference between success and failure. How difficult it is, then, to put value on a food without going very fully into the whole question of the animal's diet. I bring forward this point because at present there is a tendency, and a very vicious one, to "simplify" feeding by reducing all manner of foods to a common term, and valuing them simply on their total calorie content. There is grave danger in trying to make too simple a very complicated and difficult science. But the veterinary surgeon can give most useful advice, provided that he has made a thorough study of the whole subject. For example, if he has charge of a big stud of horses, he can effect great economy by substitional dieting, feeding maize instead of oats when the former is relatively cheaper than the latter.

Suppose, for instance, a stud of horses is receiving an allowance of 14lbs. of oats a day. The present price of oats being £11 per ton and of maize £10 per ton, if maize is substituted for part of the oats there will be a saving of more than £1 per ton, because 6lbs. of maize are equal to 8lbs. of oats. The cost of 14lbs. of oats at £11 per ton is 1s. 4½d. per day per horse. If instead of feeding 14lbs. of oats we give 6lbs. of oats and 6lbs of maize, which we can do without the horse losing anything and without doing him any harm, the oats will cost 7d. per day and the maize 6¼d., or a total cost of 1s. 1¼d. instead of 1s. 4½d. For a stud of twenty horses this is equal to a saving of approximately £100 per annum. But substitional dieting has to be carefully done, else it will do more harm than good.

There is, as you know, a growing tendency for municipal authorities to employ a whole-time veterinary officer, or, indeed, a staff of officers. Among their other duties is that of looking after the welfare of the municipal horses, but that which has the most important bearing on the health of the animals, their feeding, is usually left in the hands of a municipal officer who may possess no real knowledge of animal husbandry and still less of the true meaning of economic feeding. The late Mr. Malcolm demonstrated to his authority the definite financial advantage to the corporation that followed the placing of the feeding of their horses in veterinary hands. Municipal authorities, as well as other people, are coming to recognise that the real duty of a veterinary surgeon is to keep animals in health, not merely to cure the results of bad practice. Neither horses nor any other animal can be kept well unless there is good feeding and good animal husbandry.

Before the war, which forced us to study economy whether we wished to or not, we paid very little attention, comparatively speaking, to either pigs or poultry, and yet after the cow these animals are the most economical and most productive animals that we keep. It is not surprising, therefore, that the scientific feeding of pigs and poultry has now come very much to the front. This is as it should be, because the proper way of stopping the influx into this country of foreign eggs, bacon and pork is by pro-

ducing these foods as cheaply as our foreign competitors do. In the past we did not pay quite as much attention to the feeding of these animals as we might have done. Yet how can we cure their diseases unless we have more than a passing knowledge of the manner in which our patients are fed ?

Now let us pass for a moment from that side of the matter and consider more closely the relation of feeding to disease. The late war taught us many things, some good and some bad. But whatever else it did it gave a decided fillip to the study of animal feeding, and among other things provided a very striking lesson to horse-owners. When the Horse Rationing Order, which had the effect of reducing rations, had been in force a little while, horse-owners found to their surprise that not only did the horses do just as good work as formerly, but that they did even better, and, most astonishing thing, that the health of the animals was kept on a higher plane and that the incidence of " colics " and the various forms of indigestion fell appreciably. I feel sure that you will agree with me if I suggest that " colic " is much less common to-day in big studs than it was ten years ago. As every veterinary surgeon knows, colic is the product of bad management, which includes over-feeding.

While I am of the opinion that colic among horses has become much less frequent, I am inclined to think that disease among cattle, especially dairy cows, due to some dietetic error, is on the increase. But whether it is actually on the increase or not, mal-nutrition certainly causes a great deal of loss and is an important factor in reducing the efficiency of the State as a home-producer of animal food. Incidentally it supplies us with a great deal of work. It is astonishing the number of outbreaks of illness among animals that we get due to food poisoning, either from eating materials naturally poisonous, and which should not have been fed, or from consuming decomposed foods, especially decomposed protein foods such as the various oil cakes and meals.

Not long ago I had a telephone message one night asking me to go over to Fife to meet a veterinary surgeon in consultation as to the cause of the illness and death of some cows. When I got there early the next morning four cows out of, I think, twenty had died quite suddenly, others were more or less ill, and one very ill indeed. The farmer suspected the bean meal (the last-purchased food) as being the cause of the trouble, but the animals had been poisoned by eating some decomposed compound cake which the farmer had assured us was quite above suspicion. He had forgotten the old proverb " that the eye of the master fattens the cattle," and had overrated the mental capacity of his cowman. His loss was due to carelessness, as two bags of the cake out of the consignment had got wet in transit, and had decomposed and should not have been fed to animals. One can record many cases such as this, and some of them are very difficult and worrying, and sometimes there is very little to guide the practitioner as to the cause of the trouble. I had a case in England some months ago where decorticated ground nut cake (monkey nut cake) upset quite a number of cows, the trouble being due to the decomposition of the residual fat in the cake with the liberation of a high percentage of free fatty acids, and also to protein decomposition. In this case the cake appeared to be quite sound except for slight traces of mould here and there.

Sophisticated foods are responsible for trouble now and then. When you can buy so-called bean meal cheaper than you can buy the beans from which it is supposed to be made, which you can do sometimes, it causes one to think furiously. Not long ago a food merchant bought a large consignment of crushed seeds from a wholesale shipper. After he had bought them he wondered what they were, and if they were fit for animal food. They reached me with the request that I should supply the information. These seeds, of which the merchant had bought many tons, were the yellow lupine seeds, which, as you know, are very poisonous unless fed with great care. I never heard what happened to them, but one may assume that they were not thrown away.

Yet still more difficult than these cases which I have just mentioned, and offering a fruitful field for research, is the possible, and I think one may almost say probable, connection between feeding and those diseases the real causes of which are still obscure. One has always to keep in mind that animals to-day are bred and reared under very unnatural conditions, and that infringements of the laws of nature tend rather to increase than to decrease under present conditions of intensive stock-keeping. Food materials are modified and de-natured, and many of the by-products given to animals are incomplete as foods, and have accordingly to be most carefully combined if the animal is to get the nutrients it may require. This has a special bearing on the health of the heavy milking cow and her future usefulness.

For some years we lived in an atmosphere saturated with talk on vitamins; now these are pushed more into the background, and mineral deficiency would appear to be the all-important factor in causing ill-health. For many years it has been thought that a deficient mineral supply or an intake of mineral matter so unbalanced as to upset the normal concentration in the tissues of the various ions, such as sodium, chlorine, etc., plays a very important part in upsetting metabolism, and so lowering the health level. There is nothing new in this suggestion, but recent years have seen a more intensive study of this aspect of nutrition, and it seems probable that before long we shall be in possession of valuable facts that will throw light on what are at present obscure diseases.

One may ask what connection, if any, is there between subtle dietetic errors and such diseases as sterility, non-contagious abortion, susceptibility to tuberculosis, cirrhosis of the liver (particularly in pigs), eczema in dogs, stomach staggers in cattle, urticaria in cattle, and a host of other diseases, not forgetting rickets. Two or three years ago, when discussing the high mortality among sheep and lambs

with a farmer, I suggested to him that he should feed his ewes better from the time they go to the tup, and advocated giving a little fish meal or meat-and-bone meal, on the assumption that they were not getting a sufficient mineral supply. His reply was to the effect that if he " did " his ewes too well when breeding for cross-bred lambs, that the lambs grew so big *in utero* that the ewes had difficulty in lambing. It would appear, then, that this farmer and others underfeed their sheep for the reason given. Now, when we remember that the mother will part with material from her tissues with which to build the fœtus, if it is denied in the food, it is not difficult to imagine that the vitality of certain ewes and lambs must be very low at the time of lambing and for some time after. Indeed, there are many who believe that bad animal husbandry, including erroneous feeding, is the primary cause of an appreciable amount of sheep disease, whatever part bacteria may play when the animals become *obviously* ill. Be that as it may, it would seem a profitable undertaking to study very carefully the nutrition of sheep and its possible effect on their stamina.

I have but skimmed over what is in reality a most fascinating subject. My object in reading this paper has not been to give you personal opinions on any particular point, but rather, if I may say so, to stimulate, should stimulus be needed, your interest in what I am sure is a very, very important branch of our work. Many veterinary surgeons in general practice have made most valuable observations connected with the feeding of animals, as, for example, your own President. It is at a meeting such as this that an opportunity arises to discuss and record your experiences, and thus benefit the profession as a whole.

It may, of course, be said, and it is in fact said, that the feeding of stock is not our domain. My reply to this is, that it is scarcely possible to diagnose, still less to treat, illness due to bad nutrition unless we ourselves are masters of the science of feeding. Furthermore, it is surely our business to give advice calculated to help to maintain the stock of this country in a healthy state.

Discussion.

Mr. John Taylor, Edinburgh, likened Professor Linton's paper to a box of pills; there was a little in it of everything, and opinions on troubles of all kinds of livestock—cattle, horses, sheep, pigs, and poultry. With regard to rickets, it had, he thought, been decided that that disease was caused by mineral deficiency; and in his own experience with dogs he had found that when suffering from that disease they improved rapidly when put on food containing mineral ingredients. Mr. Taylor then dealt with question of colic in horses. The disappearance of this the trouble, in his view, was due to the war-time Rationing Order, along with the change in the working life of the horse, brought about by the eight hours' day. With shorter working hours, he thought that colic troubles were now a thing of the past. In certain large stables in Edinburgh it had been necessary only once in the past few years to call in a veterinary surgeon to a colic case; and it was known that the rationing was at the bottom of this state of matters. Professor Linton had spoken of substitutional dieting and the replacement of oats by maize. In his opinion, maize did not suit Edinburgh horses, and he recalled the old days when colic was very common when maize was used. In Edinburgh they could not put more than two lbs. of maize in the horse's ration. He thought the water had something to do with this, the water of Edinburgh being much harder than the water of Glasgow. In his opinion, they could not use maize in Edinburgh without causing colic.

While they had not much colic now, there was plenty of stomach staggers among the dairy cows. The dairymen in the Edinburgh district, he considered, came under the second category mentioned by Professor Linton—those who went on doing what their grandfathers did before them. The Edinburgh dairying system was different from that practised in the West. The cows were not run out of doors as was the case with cows on dairy farms in Lanarkshire and the south-western counties. They were bought in at the calving—often big cows from the North of England, because these stood the heavy feeding better. But he knew of an Ayrshire cross cow that had stood in a byre milking steadily for three years without illness. The third class of stockowner mentioned by Professor Linton was a class with which he sympathised very much indeed. There were many allotments around Edinburgh, and two large farms had been broken up into small places for pigs and poultry, and he did not know how these smallholders were to make a living. In regard to feeding and nutrition problems in general, they were not all studying this subject to the same extent as Professor Linton, but this matter was growing in importance. He also was much struck by the great number of queries from farmers and dairymen that appeared in the agricultural papers concerning the feeding of dairy cows. He did not know, however, if all the replies given were understood; he thought at times that they might be expressed in plainer language. He did not think that a dairyman could be expected to go round with a pair of scales weighing out each cow's ration.

Mr. Jas. Macfarlane, Glasgow, after thanking Professor Linton for his comprehensive paper, proceeded to give the best methods of feeding a stud of work horses to get the best results from a general health point of view, and for fitness for work at all times. The eight hours' day, he said, was a great advantage and one of the chief causes of freedom from colic and other complaints. Water, he was sure, should be offered at all times in small quantities; whether before or after feeding did not matter, though most horses preferred the latter. His ideal would be an installation of water in every stall; watering outside should be done with pails—not at public drinking troughs. There should be a fresh supply daily in the stable, and strict cleanliness should be observed. The first essential about the food was that it must be sound. The only true economy consisted in buying food of the best quality, and it should be kept in prime condition until required. Artificial foods, he thought, could never be so cheap as the natural products of the soil. All hay and straw should be cut into ¾in. lengths, and the lowest quantity essential at any time to a horse, whether working or idle, was ten lbs. per horse per day. Dust and metal should be extracted,

all grain should be cracked or bruised, and the ingredients of the resultant chop thoroughly mixed. He believed in damping the chop either with plain water or treacle water, provided it was used within forty-eight hours of being damped. The food should be given frequently and in small quantities. A suitable daily feed for horses on ordinary heavy work was as follows: hay, 14lb., all being cut, and preferably hard hay, such as Timothy (from 4 to 6 lbs. of oat straw could be substituted, especially if the hay was soft); grain, 16lbs. if mixed, and 18lbs. if oats alone. Treacle and linseed oil could be added daily to the chop given in the stable as a laxative. Maize was a safe feed if cracked and restricted to 5lbs. per horse daily, and preferably given in cold weather, as it was a great fat producer. Barley could be given in the same quantity, and was not so risky as maize. Peas and beans could be given up to 3lbs. per horse daily. He did not advocate the use of wheat; turnips and cut grass should be given in season. He believed that periodic changes of quantities and ingredients in the grain ration were profitable, provided the changes were made gradually. The quantities to be given depended on the individual horse, and the intensity of the work to be done, and whether the horses were gross or shy feeders. Shy feeders were often very fat. The feeding should be light during idleness, as only five-twelfths of the working ration was necessary for maintenance, while exercise was also necessary. The teeth of the horse should get regular attention. A danger to guard against was that of carters stealing food for their horses over and above the official ration, especially if a concentrated food was used. This was often a cause of colic. With regard to dust balls, scraps of worn zinc plate formed the commonest nucleus. Either common salt or magnesium sulphate given in doses of 2oz. to 4oz. once a week in spring and autumn was a useful adjunct. In feeding sick horses long hay should be given, preferably No. 1 Canadian Timothy; grass and roots in season, pot barley, linseed and bran mashes with bruised oats dry or steamed. Water should always be in front of the animal. In conclusion, he said, the altered conditions had made the giving of a nightly mash possible to the older and heavy worked horses; it should be mixed with cold water, and where concentrated meals were used, a fair proportion of "seeds" or "thirds" and cut hay should be added to prevent the animal from bolting the mash. The thirds helped to keep the mash open and friable.

Mr. W. W. PEGGIE, Biggar, said Professor Linton, as they all knew, was an authority on dietetic matters. He, Mr. Peggie, thought if they could study the subject of scientific rationing more rationally, they would have still fewer colic cases. With regard to cows, they often found large dairy cows, such as Holsteins and heavy shorthorns, carried on ground not fit to support that class of cow, because of lack of suitable minerals in the soil; consequently the animals did not do well, but the addition of certain salts to their food caused an improvement. Abortion and sterility could often be traced to the absence of salts, particularly calcium phosphate. It would pay them if they studied more carefully these dietetic matters, which were not gone into nearly as thoroughly as they might be. He thought that horses should be watered before being fed, as the water might wash undigested food out of the stomach. He agreed that substitutional dieting should be effected gradually.

Professor W. ROBB, Glasgow, said he was struck by the tone of Professor Linton's paper, and by the splendid body of men present to listen to it. If he did not belong to the profession himself, he would have liked to congratulate the members of the profession on starting out to eliminate diseases, and so doing away with their living. (Laughter.) When animals were being fed under conditions that were not ideal, diseases ensued, and the veterinary surgeon was called in and asked to give advice on what was wrong, and how to prevent it. That advice would, no doubt, benefit the client and gain his confidence, and that was on the right lines because when the client was put right in one case he would come back in connection with other cases. Mention had been made of maize as a food for horses; if maize was a dangerous food, even if it cost less per ton than oats, that saving would never make up for a loss or two. There was no doubt that maize was the cause of many cases of twist. Some veterinary surgeons said that since they had used the stomach tube they had never had a case of twist. Well, he never used the stomach tube, and he never had a case of twist either. This was due, to a great extent, to the shorter day now worked. There was a big difference from the days when horses used to start as early as four in the morning and not be back, perhaps, until eight at night, when they came in tired and hungry and bolted their food. Before hay-cutting machines came in horses used to get a soft mash when they came in at night, and they bolted it. Mr. Macfarlane had referred to the condition of the stomachs of horses fed on maize and he had also said that maize should be fed to horses crushed rather than whole. He did not agree with that, because the more the maize was crushed the nearer it got to flour, and the greater the chance of gastric tympany. When grain was crushed rather fine there was the same result. Maize was scarce during the war, and when it became plentiful once more one stable under his care returned to it again; but one fortnight satisfied them. Perhaps they would expect him to tell them how firms that fed their horses on nothing but maize and hay escaped trouble. In America maize was used to feed horses, but he was at a loss to understand why maize was dangerous under certain circumstances but not in others. ProfessorLinton had told them that the rationing system had put an end to colic; but it had left another trouble, common in Glasgow, though perhaps not in the East. Horses would go down in the street and could not get up. They seemed in good health, and had no rise in temperature, nor abnormal pulse, but they appeared to be exhausted.

If they were put in slings they did fairly well, but went down again when the slings were taken away from them. Often the owner had them destroyed. They were fed on oats and hay. Continuing, he said that he had seen horses do better when on scalded than when on boiled food. As to the amount of straw that could be substituted for hay, he was not quite clear, but as a practical foodstuff straw was not so good as hay. Many horses had been put on straw during the war, from necessity, but they went down in condition.

Mr. GOFTON, Edinburgh, described Professor Linton's paper as so broad that it was difficult to discuss it, but

he would like to speak on one or two points raised. One was the part played in the causation of diseases by mineral elements in the food. He referred not to actual causal factors, but factors preparing the ground on which the bacterial factors could work. In this connection, he made reference to the work being carried out in Aberdeen. This, he said, had brought one fact to light—that team work was essential, otherwise they were very apt to be led to wrong conclusions. In the old days there had been a lot of colic among horses. Food was an important factor, but it was not the only one. He recalled an instance when there were 600 horses, in several different stables, but all receiving the same food from the same centre, and prepared in the same way. The horses in one stable, however, had different work to do, and this stable from being without colic came to have a case or two every night, and some of them fatal cases. Town veterinary surgeons must realise that horses that were heavily worked were most liable to colic; and that was more important even than changes of food. As to water, he held that horses should have as much and as often as they liked; if this were attended to, there was not much to fear on that score. Proceeding, Mr. Gofton dealt with Denmark's pre-eminence in bacon and dairy produce. There was an impression that the Danes had standardised methods of feeding. So far as he knew this was not the case, but there was standardisation of products. He was quite sure, however, that the pig-keeper and the dairyman would not get the best market unless they fed their animals so as to get the best produce. The bacon curers in this country had a difficulty in that they could not get the quality required for their business, and he believed that on investigation it would be found that this was due to differences in the ways of feeding. Recent articles in the agricultural papers showed the interest that was being taken in this subject. Another point was that greater attention should be given to the rearing and feeding of young stock at the time of weaning and after. That was a vital period, for young animals must be started on the right road, and if this was done it was easier keeping them on the right road.

Mr. R. Mitchell, Glasgow, considered that the quality of the food had a good deal more to do with trouble in animals than the actual feeding, and that more attention should be paid to moulds in grains, etc., with a view to preventing the diseases they caused. With regard to horses he pointed out that heavy horses were much more liable to trouble than were light horses, even though the light horses were hard at work.

Mr. A. Spruell, Dundee, remarked that it had been clearly shown that they were nearing the millennium—another war with the same results as the last, and there would be no more digestive troubles. He did not agree that this country could supply itself with bacon and eggs, no matter how the stock was fed, for under present conditions in regard to rent, etc., the foreigner could still send in his produce. He agreed that heavy work was a cause of colic. In his war experience he found colic practically negligible. In reporting on 5,000 horses weekly there were never more than one or two cases of digestive trouble, and these were in horses that had been under great strain.

Mr. J. Howard Jones, Edinburgh, said the subject of dietetics was one that would loom very largely in the profession in the future. He would ask Professor Linton if he could explain something about the dietetic causes of cirrhosis in the pig's liver. Mr. Taylor had mentioned a cow that lived three years in an Edinburgh dairy, giving milk the whole time. He knew two other cases of the same kind, also Ayrshire cross cows, and one of them was still living. One of these cows, it was noticed, went off milk when the quantity of feeding was reduced and went on again when better feeding was given.

Professor J. Russell Greig, Edinburgh, did not see eye to eye with his colleague, Professor Linton, in all matters relating to diet. He considered that dietetics was not a science but an art. Proceeding, he stated that in war-time, when they were very hard up for food for horses, he had tried feeding them on horse flesh, the flesh being stewed and given along with the gravy. It was given in the form of a bolus, and this was kept up successfully for several months. The horses preferred it to oats, and they did splendidly. He also mentioned the difference in the condition of army horses in different units, though they were on the same rations. The horses were in best condition in those units where the feeding was more directly under the eye of the transport officer; the feeding was an art. Errors in dieting led to various troubles, one of which was parasitism; they all knew how that followed mal-nutrition.

Mr. George Weir, Glasgow, congratulated Professor Linton on the subject of his paper, which, he said, had stimulated one of the best discussions they had had for a long time. His earliest recollections of the Veterinary Profession started some time ago. He remembered his late father being out about six nights in the week, mostly on colic cases. Before the war colic cases were becoming much fewer, due in part to the motor car; but hours of work had something to do with it.

In his experience, most colic cases occurred where horses were poorly fed and hard worked. The saying that more horses died of over-feeding than under-feeding was a fallacy. Well-fed horses always did best. He had the honour to have charge of one of the largest stables of horses in Glasgow, and not one horse there got boiled food except when it was ill. He agreed that there should be water in the stable, so that the horses could drink at any time. Some of them, he noticed, would take a mouthful of water and a mouthful of food time about, and it did no harm. Rickets was due to faulty dieting; and they knew how soon dogs would respond to a change of diet. Feeding was one of the great factors in that disease.

The President (Mr. Hugh Begg) thought it strange that the word "vitamines" should have been mentioned only once during the afternoon, and that by the essayist. The feathers of that fashion appeared to have completely flown, and all because of the Rowett Institute dictum that "mineral requirements" was the important factor, and that was now the fashion. He wondered what was defective in the case of those horses that suffered from asthma during the winter, but began to recover as soon as they were put off winter food and on to the grass. He knew of many cases of this kind. Was it possibly lack of minerals in the foods or lack of vitamines? He pointed out that

persons dealing with milk very properly held vitamines to be important, and he thought that they should be spoken of more than they were. He wondered if the cases of horses going down, as mentioned by Professor Robb, might be due to lead poisoning. He had known cases of this due to horses drinking water which had stood in the pipes over-night, and contained an abnormal amount of lead. In one instance the loss of seventeen horses resulted.

The Reply.

Professor Linton, in the course of his reply, said with regard to the feeding of maize to horses, that this could be done by some people with conspicuous success, and by others with no success at all. In some areas of America maize was the only cereal fed to horses, but when they were bought and moved into towns it was thought that maize was not good for feeding, and oats were given instead. The secret of success in feeding maize was to introduce it into the ration with care, taking at least fourteen days in which to effect the substitution. He knew a veterinary surgeon in England who had fed maize to his posting horses with entire success. The accumulation of maize in the stomach and intestines was well known to be due to the lack of fibre in the maize, and in America this was got over by grinding the maize cob and feeding it with the grain. In dairying, success depended almost entirely on dieting, and in reply to Mr. Taylor's remarks about weighing the food of individual cows, he said this was not necessary. Marked measures were used, and each cow got what she was entitled to get. A good deal had been said about colic; this was of course due to many causes—over, under, or bad feeding, over and under work, general bad management, etc. Overwork was the most important factor, especially when the horses had to work for long periods without food, as had been pointed out by Mr. Caulton Reeks, to whom the profession owed a debt of gratitude for having recorded his observations. When in practice in Devonshire, Professor Linton said that he found a great deal of troublesome colic, gastric tympany, among post horses that used to travel about forty miles a day in the summer with heavy loads. They returned home at night in an exhausted condition, and could not digest their food, which underwent fermentation in the stomach. He was of the opinion that horses could be watered at any time; but in commercial stables, unless there was a very good man in charge, it was better not to have individual water pots before the horses, because these got so dirty. The belief that watering after feeding washed the food from the stomach was not borne out by experiments or practice. He had fed to a number of horses stained oats, then given them a big drink of water, and had them slaughtered immediately. Careful examination showed him that when the stomach was full the water did not mix with the food, but passed directly out of the stomach. Careful and oft-repeated experiments had shown that there was no reduction in the digestibility of food when water was given after feeding. If, of course, a horse had been kept on the system of watering only before feeding, and then was watered after feeding, the sudden change would have a definite and untoward effect. With regard to Professor Robb's remarks about them doing away with their living, he held that veterinary surgeons should give advice on feeding when asked for it, and that the person to whom it was given should be prepared to pay for it. There was no experience to show that boiling increased the digestibility of food, but rather that it decreased it. With regard to pig feeding, what the Danes did was to produce a pork that took on pickle well and with a "standardised" fat. This was a question of feeding.

What they were trying to do in this country was to get a pig of a certain desired shape, and one that would pickle well, and always in the same manner. Moulds, which Mr. Mitchell had mentioned, caused tremendous losses in this country from the feeding of mouldy foods to animals. This came back to the old saying "that the eye of the master fattens the cattle." If farmers gave more personal attention to their stock, there would be less trouble. He differed from Professor Greig's view that feeding was an art and not a science. It was the art of applying a science, and the science of feeding had been built up by experience. He also had fed horses with horse flesh; at first they would not eat it, but later became very fond of it. This recalled the old cannibal idea that when a warrior ate a slain enemy the spirit of the slain entered him and made him doubly valiant and strong. The suggested scientific explanation of this was that the animal or person was consuming its own kind of protein which was most suitable for its requirements. He had seen a great deal of rickets in pigs, and had been through a great many piggeries. The thing that he had noticed was that there never seemed to be a case of rickets or mal-nutrition in a piggery where hotel garbage or slaughterhouse offal was fed. It was the opinion of many pig-keepers that hotel garbage produced the quickest growing and most healthy pigs. With regard to the question of Mr. Begg concerning asthma, it was possible that the amelioration of the symptoms of grass feeding in the place of dry hay and grain was due to the moist condition of the grass and the lack of dust. The question of dust in food had been raised by Mr. Macfarlane. He (the speaker) thought that possibly too much importance was attached to the necessity of removing all the dust by machinery.

When at Aldershot he found that the dust removed when the hay and straw were chaffed was sold to a dairyman, who fed it to his cows with very good results. He had had it analysed, and found very little mineral matter in it; it was chiefly vegetable matter, such as pollen, etc. In connection with some recent cases of anthrax in Lanarkshire, Mr. Begg had informed him that the cattle had been fed on mutta pea meal. It was perhaps not generally known that this meal was extensively used for feeding cows. It was much cheaper than ordinary pea or bean meal, being offered last summer at £7 10s. per ton, as compared with £12 or £13 per ton for pea or bean meal. Cattle were not nearly so susceptible to mutta poisoning as were horses. He wished to draw attention to the frequency with which China beans were associated with outbreaks of anthrax. China beans and the Indian mutta pea were, in his opinion, two of the dirtiest foods imported; they were usually heavily contaminated with earth. It was known that in parts of India and China anthrax carcases were not treated with so much respect as in this

(*Continued at foot of next column.*)

Practitioner's Successful Slander Action.

At Sussex Winter Assizes, before the Lord Chief Justice and a special jury, on Tuesday, March 11th, an action was heard in which Mr. Joseph Benjamin Dier, veterinary surgeon, of East Grinstead, sued Harry Geering, farmer, of Barcombe, for damages for alleged slander. The defence was a denial of utterance, or, alternatively, that the words spoken were mere vulgar abuse and were not actionable.

Sir Edward Marshall Hall, K.C., and Mr. E. W. Hansell (instructed by Messrs. Whitley, Hughes and Luscombe, of East Grinstead) were for plaintiff; and defendant was represented by Mr. G. Thorn Drury, K.C., and Mr. F. W. Gentle (instructed by Mr. J. C. Buckwell, of Brighton).

Sir Edward Marshall Hall said the words complained of were spoken of at East Grinstead Market on August 2nd last year in the presence of some seventy or eighty people, and they cast a serious reflection upon plaintiff, who held a high reputation in his profession in north-east Sussex and the adjoining portions of Surrey and Kent. Defendant apparently took exception to plaintiff's action in refusing to pass as sound for insurance a mare which defendant had sold to Mr. Stripp. Not receiving an apology, plaintiff's solicitors wrote to defendant on September 6th, calling attention to the words used and asking for an apology which plaintiff would be at liberty to show to any of the persons who were present at the time the words were used, and pointing out that failing the receipt of such a letter, Mr. Dier would have no option but to take action in the matter. In reply defendant's solicitor wrote denying that defendant made use of the words which it had been asserted that he used, and adding that Mr. Geering was exceedingly sorry that anything he said should have given umbrage to defendant. Plaintiff did not wish to claim excessive damages, but he thought he was entitled to substantial damages such as would show to the world that there was not a particle of truth in the statements of which defendant made use.

Plaintiff's Evidence.

Mr. J. B. Dier, M.R.C.V.S., said he was a member of the firm of Messrs. Dier and Marks, of East Grinstead, and had practised as a veterinary surgeon for 35 years. He acted for a number of big insurance companies and he was inspector under the Contagious Diseases of Animals Act, and he also had the oversight of several important studs of horses and herds of pedigree cattle. In July, 1923, he was retained by the Northern Insurance Company to examine a mare which had been sold to Mr. Stripp. He did not know at the time that the animal had been sold by defendant. He was not able to advise the Insurance Company to accept the risk to the value of 50 guineas—the amount for which it was suggested that the mare should be insured. The mare had badly-shaped hocks and had spavin and other defects in the legs, and he recommended that as the animal was only to be insured against death from accident or disease the Company could accept the risk up to £30. On August 2nd last year, witness was in Cantelupe Road, opposite the entrance gate to East Grinstead Market, talking to Police-Supt. Edgeler. It was between 12 and 1 o'clock, just as the business of the market was about to commence. Defendant went up to witness and asked whether he could speak to him for a minute. Witness walked two or three yards away from the Superintendent and defendant then asked him, "Have you examined a horse for Mr. Stripp?" Witness replied that he did not examine a horse for Mr. Stripp, but he examined one for the Northern Insurance Company. Defendant said, "You did not pass her sound," and witness replied, "No." Defendant said, "You did not pass her sound because you did not have anything to do with the deal and get £2 or £3 out of it." Witness told defendant that he did not wish to have anything to do with horse dealing, and that it was his duty to examine horses when requested to do so. Defendant then said, "You do not know your work and can be bought for £2 or £3 any time." Witness said, "I never have accepted a bribe and never will to pass any horse." The mare in question was in a cart in charge of Mr. Stripp close by, and defendant asked witness to see Mr. Stripp. Witness walked across the road to Mr. Stripp, passing Supt. Edgeler and P.C. Mepham. Defendant said to Mr. Stripp, "Here is Mr. Dier. He would not pass the mare because he did not have anything to do with the deal and get £2 or £3 out of it," and defendant added, "He can be bought for £2 or £3 any time." He spoke these words in a loud voice that could be heard thirty or forty yards away. There were a good many people about and the market ring was just over the wall. Defendant said, "He does not know his work," and he repeated that on several occasions. Witness denied the allegation and said, "There is no truth whatever in what you say, Mr. Geering." Defendant said, "Well, look at the mare." Witness called attention to the animal's hocks and said he could not pass a mare as sound with hocks like that. Defendant shouted out again that witness did not know his work, and added, "I will mark you in this neighbourhood." Witness told him if he did that he would have to mark him for slander. Witness added that he did not wish to be insulted in the public street and he walked away because defendant continued shouting that witness did not know his work and the public were starting to congregate. Witness walked away to the market gates and saw several people leaving the market to see what the disturbance was about.

Sir Edward Marshall Hall: Was Mr. Geering sober?

Witness: Quite sober. I have never known him to be otherwise. Mr. Dier added that Mr. Geering attended East Grinstead Market practically every week and witness was there every week on duty. Defendant did not offer him an apology. Witness thought that he would do so. In September witness consulted his solicitors as the public were talking about the matter and asking whether Mr. Geering had apologised or withdrawn the assertions he had made.

Cross-examined: Witness had a high reputation in the East Grinstead district, and as far as he knew he still had a high reputation. Defendant did not seem to lose his temper until the latter part of the incident, when he used a few "swear words." Witness was firm, but did not speak in an angry tone of voice. Witness did not lose his temper although he was hurt by what defendant said about him.

Mr. Thorn Drury: Do you think there is the slightest ground for supposing that anyone took any serious notice of what was said?

Witness: Perhaps my old clients who have known me for years may not have done so; but there were other people about who had come to the district recently and did not know me so well. They may have been affected by what was said.

You won't make a reduced return to the Income Tax Commissioners because of this?—I do not know. My returns for this year are within £2 or £3 of £100 down compared with the corresponding quarter of last year.

Replying to further questions, Mr. Dier said he could not say whether that drop had anything to do with this

(*Continued from previous page.*)

country, and the soil became heavily infected as a result of skinning carcases.

It seemed to him possible, therefore, that some of these outbreaks of anthrax might be due to the infected soil on the beans, and not necessarily to hide-infection on the ship.

Professor Linton then passed round for inspection some mutta peas and China beans.

The Chairman remarked that one food merchant had told him that he had removed as much as a hundredweight and a half of dirt, earth, and stones from a ton of mutta peas.

On the call of the Chairman a hearty vote of thanks was accorded to Professor Linton.

incident. Witness did not ask defendant to apologise. Defendant passed within four or five yards of him every market day. Witness consulted his solicitors because of what he heard about the incident from other markets and through people coming to him and asking whether he was not going to do something in the matter. He understood that defendant's friends advised him to apologise, and witness expected him to do so.

In re-examination plaintiff said defendant had never attempted to apologise for or withdraw the words he used.

CORROBORATIVE EVIDENCE.

John Stripp, carter, carrying on business in the East Grinstead district, said he bought a mare from defendant and approached the Insurance Company with regard to the insurance of the animal. On August 2nd, at East Grinstead Market, he heard defendant say that Mr. Dier did not know his work and could be bought for a pound or two. Defendant spoke in a loud voice. He heard Mr. Dier say that he could not pass a horse with hocks like that one had.

Police-Supt. W. Edgeler, of East Grinstead, said he was speaking to Mr. Dier when defendant walked up. He heard defendant say to plaintiff, "You do not know your —— work. You can be bought for a quid or two at any time." Later he heard defendant say, "You did not pass the mare because you never got anything out of it." Defendant did not appear to be in a temper. He spoke in a loud voice, and witness heard what was said, although he was 15 yards away. He did not hear what Mr. Dier said to defendant.

P.C. Mepham was in Court, but it was not deemed necessary to call him as a witness.

This closed the case for the plaintiff, and Mr. Thorn Drury said he did not propose to call any evidence.

ADDRESSES AND VERDICT.

Sir Edward Marshall Hall, in addressing the jury, pointed out that the matter was an important one for plaintiff as his living depended upon his reputation. Up to that moment there had not been any apology from defendant for the words which he had not denied in Court were used and no expression of regret or withdrawal of those words—simply a letter from his solicitor stating that he was exceedingly sorry that anything he said should have given umbrage to plaintiff. Practically the only question for the jury, in face of defendant not having gone into the witness box, was the amount of the damages, and although plaintiff did not ask for excessive damages he was entitled to such an amount as would show the world that there was no foundation for the accusations made by defendant on this occasion, and also that persons making such accusations must be prepared to pay compensation for them.

Mr. Thorn Drury, on behalf of defendant, submitted that such words as were used by defendant were never intended to be understood as conveying any sort of serious reflection upon plaintiff. They were said in the heat of the moment when defendant was angry, and he asked the jury to come to the conclusion that not one person who heard them accepted them as involving any serious charge against plaintiff. Mr. Dier had not suggested that he was one-halfpenny the worse through what was said, and he did not think it could be shown that the angry words used had affected his reputation in any sense. There was no suggestion that plaintiff had done anything otherwise than with the strictest regard for duty in examining the horse, although defendant might, not unnaturally, consider that failure to pass the horse as sound cast some reflection upon him. He was entirely mistaken in taking up the attitude that he had taken up. There in Court he disclaimed on behalf of defendant any ground for suggesting that Mr Dier acted otherwise than in strict discharge of his duty, and he submitted that short of awarding contemptuous damages—if the jury came to the conclusion that damages should be awarded—a very small sum would meet the case, as he did not suppose that any person who heard the words used attached the slightest weight to them.

The Judge said it would be noted that defendant had not gone into the box and stated that he never meant to make any imputation upon plaintiff and that he had not the slightest intention of making any such imputation; that he recognised that there was no ground for making any imputation upon him and assuring him that no such imputation was intended, and that no importance was to be attached to the words used. If the jury found in favour of plaintiff they were entitled to award such damages as would show that there was not the slightest ground for making any of the imputations upon a professional gentleman of position and experience.

The jury, after a brief retirement, returned a verdict for plaintiff and awarded £250 damages. Judgment was entered for plaintiff accordingly with costs.—*East Grinstead Observer.*

LIVERPOOL UNIVERSITY VETERINARY SOCIETY PRIZE FUND.

Past students of the Liverpool School are being approached on behalf of Liverpool University Veterinary Society and several past students of the Veterinary School to give their support to the endowment of a "Prize Fund," as set out in the following resolutions passed by the Veterinary Society at their meeting on 21st February, 1924:—

(1) That as it is the 20th Anniversary of the foundation of the Liverpool University School of Veterinary Science, the occasion is opportune for the establishment of a Prize to serve as a landmark in the history of the School.

(2) That such Prize be brought into being by the Past Graduates of the School, who now number over 100, by the creation of an Endowment Fund, and that the Prize be so designated as to associate its origin to the benefactions of Past Students.

(3) That such Prize be awarded, under such conditions as the Senate may approve, to the best student in the subjects of Veterinary Pathology and Bacteriology, and that it be awarded annually.

(4) In the event any year of a student not reaching a standard meriting the award of the prize, the income of the Fund for that year to be capitalised to increase the value of the Prize for future holders.

(5) That such Prize shall take the form of money, books or instruments, and/or medal, as the Senate may direct.

(6) That subscriptions be invited from all Past Graduates of the School, and in no case shall any subscription exceed the sum of £2 2s.

(7) That the completed subscription list be circulated to all subscribers together with particulars of the arrangements made for the establishment of the Prize.

(8) Any incidental expenses incurred to be defrayed by the L.U.V.S.

The Hon. Secretary of the Society and Treasurer of the Prize Fund is Mr. A. W. Holtum, M.R.C.V.S., to whom subscriptions should be sent.

Mr. George Whitehead, M.R.C.V.S., has been invited to accept the presidency of the recently revived Batley Agricultural Society. He has been associated with it since its formation.

The Veterinary Record.

22nd March, 1924.

National Veterinary Medical Association of Great Britain and Ireland, Limited.

EDITORIAL OFFICE: 10 Gray's Inn Square, London, W.C.1.

Cheques should be made payable and all communications sent to the General Secretary at the Offices of the Association, 10 Gray's Inn Square, London, W.C.1.

THE MILK SCANDAL.

Last week a firm in Liverpool was fined £5 for selling herbal beer containing a small percentage of lead. The city analyst explained that the contamination was caused by drawing the beer through leaden pipes, and that a person taking a small quantity of the beer daily would become a sufferer from chronic lead poisoning. This case calls to mind the scare of some years ago, when the danger of arsenic in beer was so widely advertised, and brewers were prosecuted owing to small traces of arsenic being found in beer, probably owing to the use of impure glucose. These small impurities may cause chronic poisoning, which, however, is amenable to treatment when the cause is removed, but the possibility of their presence and the harm they may cause arouses a consternation in the public mind rendered sensitive by an active press publicity. Danger from tinned foods is also a subject which is considered of public importance, and there was a mild scare over the cases of botulism which occurred at Loch Maree. If the necessity for a proper guarantee of purity in beer and tinned foods is so great as to need legislation for the protection of the public, how comes it that there is no protection for the public (and particularly the children) against the constant danger of tuberculosis from milk? A man may not sell milk that is deficient in fat, etc., and he is liable to severe punishment if he sells milk with a small proportion of added water, no matter how pure that water may be. But he may with impunity sell milk which is alive with tubercle bacilli, and which, when consumed by children, may (probably will in some cases) cause life-long suffering, even if it does not cause death at an early age. This is a public scandal that is crying out for immediate attention. For years past the Veterinary Profession has been calling the attention of the Government and the public to this wicked state of things and the urgent necessity of adequate handling of the tuberculosis problem. The Medical Profession is only now beginning to realise the extent of the evil and the possibilities of its eradication. The National Clean Milk Society has attempted to inaugurate a clean milk supply by advocating pasteurisation, thus tacitly admitting that we have of necessity an impure article to deal with; they show the weakness of their case in their avoidance of dealing with the trouble at the source, namely, diseased cattle, filthy, insanitary cowsheds, and milkers whose hands are none too clean.

The pure milk supply, as well as the eradication of tuberculosis, lies in the hands of the veterinary surgeon, and it is to this profession that the public must look if it is to be protected against all the present evils associated with impure and diseased milk. The Veterinary Profession has one means of testing cattle for tuberculosis which, when properly used with proper safeguards, is absolutely reliable, namely, the Tuberculin Test. At the present time, as for years past, it is quite unreliable in a number of cases owing to the fact that cattle may be "doped" or injected with tuberculin before the test is made by the veterinary surgeon, in order that, though diseased, they may not give the typical reaction of a tuberculous cow. This evil practice is widespread in certain districts, and veterinary practitioners are perfectly aware of the fact that the certificates of tuberculin testing which they give in good faith are not worth the paper on which they are written. We have even heard of milk from sealed bottles of "graded milk, tuberculin tested" being found on bacteriological examination to contain live tubercle bacilli. The present Orders under the Milk and Dairies Act (Amendment) Act providing for the grading of milk are useless and fatuous until the distribution and use of tuberculin is properly controlled.

The proper control of tuberculin would have been obtained under the Therapeutic Substances Bill which is shortly to be re-introduced in Parliament with the support of the Ministry of Health. As a result of its provisions the working of the Orders under the Milk and Dairies Act (Amendment) Act would have been made of definite use and a real value attached to the new graded milk. Now, however, we hear on authority that veterinary therapeutic substances, including tuberculin, are to be expressly excluded from the Bill, and this provision is to be inserted *at the instance of the Ministry of Agriculture.* We are not proud of this attitude on the part of the advisers to the Ministry of Agriculture, and we think that the Veterinary Profession will strongly condemn the action taken as being against the public interest, absolutely contrary in every way to the firmly expressed opinion of the profession for the past four years, and as likely to perpetuate the glaring scandal of the continued supply of tuberculous milk.

Clinical and Case Reports.

The Editor will be glad to receive from members and others contributions to this column of reports of interesting cases.

Deviation of the Penis in the Perineum of the Equidæ.*

By Professor A. W. Whitehouse, M.R.C.V.S., M.A., D.V.H., Glasgow.

At the joint meeting of the Metropolitan and West of Scotland Divisions, held at Glasgow Veterinary College on 16th February, 1924, I demonstrated a dissection of the pelvis and genital organs of a two-year-old entire donkey colt. This preparation brought out clearly a peculiarity of position which I have observed for years in formalin-hardened subjects, a peculiarity to be found but not so readily noticeable in freshly-killed animals.

A very short distance below the anus, in fact as soon as the crura have joined the urethra and constituted the penis, it turns sharply to one side, so that retractor penis, bulbo-cavernosus (accelerator urinæ), muscle and urethra face toward the semi-membranosus muscle of one thigh, and the dorsum penis, with its vessels, faces towards the semi-membranosus of the other. This sideways position continues forward between the testicles, and what may be called the normal attitude is only regained in the preputial part.

The donkey was hardened in an extreme "rig" position, on his back, with the three upper joints of both hind legs flexed as fully as ropes could draw them. His penis was not withdrawn, but relaxed naturally, so that about one inch remained visible after the formalin was injected. On exposure it was turned so that the urethra faced to the right thigh.

At the same time I had two geldings on tables for student dissection. These animals were bled to death on the floor, lying right side uppermost; the off fore and hind legs were straightened and raised some distance, and the penis of both was fully withdrawn and tied in extension before hardening. In both of these the deviation of the penis was equally marked with that of the donkey, but one faced to the right and the other to the left.

I am convinced that this condition is the rule, and I shall try to collect *data* as to whether deviation is commoner towards one side than towards the other. The deviation is not mentioned in any anatomical text-book to which I have access, and I have failed to find any surgical notice taken of it.

Of course a median line incision at the usual seat for entrance to the pelvic urethra is perfectly safe, but below that point the deviation should be considered by surgeons. A catheter is usually passed, and will probably be palpable enough for a landmark, and in any case a good control of local hæmorrhage should clear the field, so that the white tunica albuginea of the cavernosum will be distinguishable from the red bulbo-cavernosus muscle; moreover, the muscle and the urethra are much softer than the white tunic.

I may add that a surgeon has told me that he did, on one occasion, get into the cavernosum while doing a urethrotomy.

* Presented at the joint meeting of the Scottish Metropolitan and West of Scotland Divisions, held in Glasgow on February 16th, 1924.

Bovine Coccidiosis.

By Mr. W. Scott, F.R.C.V.S., Bridgwater.

In the autumn of last year an outbreak of coccidiosis occurred in a herd of calves, in connection with which some of the data seem worthy of record.

The herd consisted of a number of polled Angus cows, running with which were thirty polled calves, varying in ages from three to six months. These cows and calves were indigenous to the farm, the herd having been started some twenty years ago.

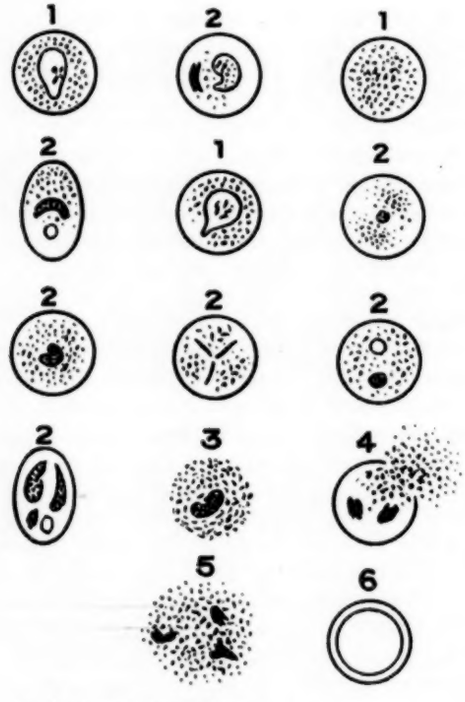
To augment the number of calves the owner purchased twelve cross-bred Devon yearlings and placed them with the cows. The herd was running on low-lying, somewhat marshy ground which, in a wet season, was liable to flooding.

Several years ago this land was subject to very fatal types of redwater infestation and the owner reminded me that from the time I advised fencing off a spring and a short water-way leading from it he had never had a case of redwater. Whether this was the cause, or whether it was a coincidence, and the herd had acquired a natural immunity, I am not prepared to say. This, however, leads me to the interesting fact that none of the thirty calves reared on the pasture suffered from coccidiosis in this outbreak, while eight out of the twelve imports did, pointing perhaps to a natural power of resistance on the part of the native calves.

Symptoms.—When I arrived, one calf had just died, one was down and unable to stand, and five others were very ill. In the early stages the animal isolates itself, the bowels become relaxed, while the buttocks and tail soon foul. In from twenty-four to forty-eight hours the back arches and the abdomen is tucked up, the animal walks carefully and slowly. The appetite is completely gone, and there may or may not be pronounced thirst. The nose is dry and hot, also the mouth and tongue. The eyes tend to recede and lose their natural expression. The conjunctiva is infected and sometimes becomes icteric, while in the last stages it is cynotic. The temperature rises to 103°–105° F., the respiration is hurried, and the pulse may reach 80 to 100 per minute. The characteristic symptom is blood coagulated in the fæces. The clots are very tenacious, bright or dark red in colour, and emit a strong odour. These clots may be mixed or partly coated with mucus. At this stage tenesmus is always present. In mild cases the diarrhæa is profuse, but little blood is present, and this is usually liquid or only slightly clotted.

Pathogenesis.—The mucosæ of the stomachs and small bowels appeared quite normal, a condition sharply contrasting with the large intestine, which

was deep red in colour, the gross lesions involving the whole wall, even to the peritoneum. The mucosæ tended to longitudinal striations and the lumen of the bowel contained blood clots and dark red liquid. Microscopical examination of scrapings taken from the mucous membrane of the large bowel revealed coccidia in various stages of development. It would appear the posterior bowel is the natural habitat of the coccidia, the possible explanation being they do not flourish in the presence of the active gastro-intestinal secretions, but I think this hypothesis, if correct, is only a partial explanation.



1 Matured coccidium.
2 Developing into sporoblasts.
3 Coccidium without visible envelope.
4 Expulsion of the microgamites.
5 A mass of microgamites.
6 Ghost-like coccidium.

That the coccidia if present in sufficient numbers, are capable of acting as active irritants, I think must be accepted, but that they are the *alpha* and *omega* in the pathological cycle must be denied. The second factor is the bacterial content of the intestines. Normally these organisms are most numerous in the posterior bowels and are kept in check by the natural protective body forces, but when the first line of defence breaks down in the mucosa, through the irritation set up by the parasites, the balance is upset, the bacterial elements become aggressive and a vicious circle is established. It is possible that the pathogenetic power of the coccidia on a perfectly healthy mucosa is not high and that that mucosa would in itself perhaps be capable of keeping the disease in check, provided a high degree of natural immunity to auto-intestinal infection existed.

I put this hypothesis forward as in part a feasible explanation to account for the [apparent] immunity which the animals—indigenous—appeared to possess. To lend some further support to this theory blood capsules were taken from three affected cases, and from these *B. coli* in pure culture were obtained, and the agglutination test gave positive results up to 1-200 dilution. I therefore suggest the vicious circle established by the *B. coli* sapræmia, besides being the terminal phase, is the main *causa causans* of the grosser bowel lesions and the grave constitutional symptoms. To strengthen this theory I may add here—although my cases were too few to dogmatise—I was struck by the marked improvement which followed large doses of *B. coli* serum: the four calves treated with the serum recovering.

Treatment.—When an animal is moribund, treatment is as a rule futile. When the practitioner is called in usually one or more animals are in this state, owing to the fact that the owner does not know what he is up against and procrastinates. A *post-mortem* examination coupled, for preference, with a microscopical examination of the bowel content, enables the attendant to give a positive diagnosis. This point settled, the affected part should be separated from the healthy and if the animals are out of doors the diseased should be housed and the others removed to fresh pastures. Too much should not be expected from drugs *per oram* save in the early stages, in which case I prefer turpentine combined with aromatic sulphuric acid and alternated with arsenate of iron, prepared chalk and Dimol. These should be mixed with demulcent gruels, chief of which is tragacanth, combined with eggs. In addition to this treatment I injected four of the calves with large doses of a polyvalent *B. coli serum*, and from this I certainly obtained what appeared to be a very favourable response in a lowering of the temperature, a return of the appetite, a cessation of the hæmorrhage and a removal of the *B. coli* from the blood stream, as was proved by subsequent blood culture. The number of cases treated by serum is of course too small to place much value upon, but I would suggest as a routine measure to be adopted by those who have an outbreak of coccidiosis, that this method is well worth trying and that they should record their experiences, favourable or otherwise. I am quite convinced the *B. coli* is a most important factor in the pathologic rôle which, so far as I know, has not received any consideration up to now from the therapeutist or the pathologist.

Notice to Divisional Secretaries.

The General Secretary would be very grateful if the secretaries of divisions would forward to him at 10 Gray's Inn Square, W.C.1, a copy of their respective membership lists, to facilitate the work of recording divisional membership in the Register of the Association.

Abstracts.

A Veterinary Sanitary Service in Relation to Public Health.

An account of the activities of the Veterinary Sanitary Service of Paris for 1917 shows an increased incidence of rabies consequent on an increase in the number of unmuzzled, uncontrolled dogs in the area. The zeal of the public in the capture of wandering dogs was attended with good results in 1916, and it is to their lack of perseverance in this direction that the 56 cases of rabies in Paris, against 51 in 1915, is largely due. The direct causes of the epizootic were dogs contaminated in the provinces, dogs bitten by others proceeding from the front and passing on, and dogs bitten by rabid strays. In January, 1917, 2,163 dogs were impounded by the police, and five cases of rabies were recorded, whereas in December, 1917, 758 dogs were impounded by the police, and there were 14 cases of rabies recorded. The figures for 1918 are likely to proceed higher. Forty-eight people were bitten by the rabid dogs, and after treatment at the Pasteur Institute, no deaths occurred.

Apart from the activities directed against the spread of rabies, good work has been done in the protection of the public against diseases communicable to man by animals. Inspection of cattle for tuberculosis has been extensively carried out: the frequency of tuberculosis in pigs and fowls has not been overlooked, and 706 porcine carcases were found affected. In fowls, apparently in a good state of flesh, large tuberculous lesions have been found in the liver, spleen, and lungs, and it is now common practice to make an incision in the right flank of fowls to ascertain the condition of the spleen and liver. Three hundred and ninety-six cases of avian tuberculosis were discovered. The diseases or defects found in fish, molluscs, and crustaceans included putrefaction, natural death, tuberculosis (in a sturgeon), redness of the flesh (codfish), ascites, and tuberculiform vegetations. The abattoir of Vincennes was an important centre for the supply of meat to the French army. It was well supervised and inspected, and over 23,000 lb. of diseased or defective meat were condemned there. Among 72,036 horses slaughtered for food six cases of glanders were found.

The report throughout bears evidence of careful compilation and thoroughness. It furnishes a useful lesson in the value of an efficient veterinary sanitary service in the protection of human health. It shows what danger may arise to the community where inspection is superficial or non-existent, and provides a conclusive and indisputable piece of evidence in favour of the establishment throughout this country of a system of public abattoir and meat inspection halls.—*The Lancet.*

Cocaine Anæsthesia Increased by Addition of Potassium Sulphate.

In 1920 C. Hirsch pointed out that the addition of K_2SO_4 to cocaine hydrochloride solution very greatly increases its anæsthetic action when superficially applied. The author fully confirms this, and finds that a 3 per cent. solution of

(*Continued at foot of next column.*)

Divisional Reports.

Midland Counties Division.

The annual meeting of the Midland Counties Division was held at the Grand Hotel, Birmingham, on Friday, February 8th, 1924, the President, Mr. A. B. Forsyth (Cannock), occupying the chair. There were also present Messrs. L. W. Heelis (Solihull), J. L. Cormack (Coventry), L. C. Maguire (Stow-on-the-Wold), F. B. O. Taylor (Redditch), S. M. Woodward (Birmingham), P. M. Evershed (Nottingham), W. F. Aston (Derby), T. D. Martin (Wellington), J. Young (Birmingham), J. Clifford (Shifnal), J. W. Conchie (Kidderminster), J. R. Barker (Hereford), J. Robertson (Stourbridge), F. Banham (Stratford-on-Avon), F. Chambers (Wolverhampton), Steele-Bodger (Tamworth), G. V. Tyerman (Ludlow), H. L. Pemberton (Bridgnorth), W. H. Brooke (Handsworth), B. De Vine (Birmingham), F. L. Gooch (Stamford), R. R. H. Over (Rugby), T. Slipper (Sutton Coldfield), Tudor Hughes (Oswestry), W. T. Olver (Tamworth), R. L. Green (Dudley), J. Martin (Wellington), Colonel Marriott, and the Hon. Secretary (Mr. H. J. Dawes, West Bromwich).

Visitors present included Messrs. J. W. McIntosh (London), G. H. Livesey (London), C. H. Ducksbury (Birmingham), F. E. Somer (Birmingham), and J. A. Mason (Wolverhampton).

Apologies for unavoidable absence were received from Sir Stewart Stockman, Professor F. T. G. Hobday, Messrs. W. D. Rees, H. B. Hiles, H. S. Reynolds, F. V. Steward, G. Rees-Mogg, J. Spruell, W. Dale, A. G. Elder, A. W. Findlay, R. Hughes, C. Huntin, D. Forwell, T. H. Hobson, H. Fairer, H. S. Cockburn, M. Sadler, J. J. Burchnall, W. Tart, T. Ludlow, M. Tailby, P. J. Simpson, J. Martin, junr., J. T. Brain, C. Ringer, C. J. Byner, A. J. Aveston, J. O. Powley, E. Hall, R. Lake, R. C. Trigger, W. Trigger, T. Spencer, J. L. McLauchlan, R. Watts, J. R. A. Jones, E. Franklin, T. D. Whitehead, W. E. Ison, H. W. Dawes, and others.

Resignation.—The Hon. Secretary announced the receipt of a letter from Mr. G. Howie, junr., until recently a member of the City of Birmingham

(*Continued from previous column.*)

cocaine hydrochloride with K_2SO_4 has the anæsthetic strength of a 20 per cent. solution of the alkaloid salt used alone, for direct application to the surface. He modifies the original formula of Hirsch thus: Cocaine hydrochloride, *three grammes*; adrenalin hydrochloride solution (1 : 1000), *five grammes*; solution of K_2SO_4 (1 : 50), 25 gms.; solution of phenol (1 : 200) to 100 c.c. The advantages of this solution, both from economy of cocaine and the avoidance of toxic symptoms, obviating the use of a more highly concentrated solution, are obvious. The solution is specially valuable for producing superficial anæsthesia of the mucous membrane, the eyes, throat, and the urinogenital tracts.—A. Abraham (*Deutsch Med. Woch.*, 1923, 1156).

Veterinary Department, who tendered his resignation as a member of the division on his removal to Newcastle-on-Tyne. The Hon. Secretary, in moving that it be accepted with regret, said Mr. Howie had made many friends during his stay in Birmingham, and he was sure they would all wish him well in his new sphere of work. The motion was agreed to.

Mr. Whyte's Accident.—The HON. SECRETARY explained that the reason of the absence of Mr. Whyte, of Tenbury, was that he had met with an accident which had resulted in a broken leg. They would miss Mr. Whyte because he was so regular in his attendance, and he (the Hon. Secretary) had already forwarded to him in the name of the division a letter of sympathy, with the hope that he would soon be well again.

Nominations and Elections.—Mr. F. CHAMBERS nominated for membership of the division Mr. J. H. Mason, of Wolverhampton, and Captain Barber, of Brewood.

Mr. DE VINE nominated Mr. F. E. Somer and Mr. C. H. Ducksbury, both members of the City of Birmingham Veterinary Department.

Mr. R. Watts, of Nuneaton, duly nominated at the previous meeting, was now elected a member of the division.

Foot-and-Mouth Disease.—The HON. SECRETARY said he had received a letter from the Central Division of the National Veterinary Medical Association, enclosing a copy of a resolution expressing the "utmost confidence in the judgment of the veterinary officials of the Ministry of Agriculture to deal effectually with the difficult problem with which they are at present confronted in connection with the extensive outbreak of foot-and-mouth disease." He suggested that that division should support that resolution. He wished they could all have heard a statement by Sir Stewart Stockman giving the history of the outbreak and the difficulties of coping with it. They would then be more ready to defend the department against some of the criticisms that were to be heard. He had every sympathy with the veterinary officials, and he thought the profession should back them up in every way. He moved that the meeting endorse the Central resolution.

Mr. DE VINE, in seconding, said he had come in contact with foot-and-mouth disease a good deal, and in his dealings with the Ministry he had found the veterinary officials most courteous and helpful in every way. They had been particularly helpful to the authorities in Birmingham by giving facilities for the re-opening of the market as soon as possible after disinfection.

The resolution was carried unanimously.

Treasurer's Statement.—The HON. TREASURER (Mr. W. H. Brooke) presented his accounts for the past year. These showed the receipts to have been £189 and the balance in hand £85, compared with £117 the previous year. This apparent loss was explained by the fact that a bill of the Hon. Secretary's for £33, which should have been included in the 1922 accounts, was not paid until 1923. Special payments included £5 5s. 0d. to the Victoria Benevolent Fund, £5 5s. 0d. to the *Field* Distemper Fund, and £10 10s. 0d. to the "Dick" Centenary Fund.

The accounts were adopted on the motion of Mr. GOOCH, who said that as one of the auditors he could testify to the finances of the division being in safe hands.

The Next Meeting.—The report of the Council, who met just prior to the general meeting, was read, making recommendations for the appointment of officers, which were dealt with later on.

On the recommendation of the Council, an invitation from Mr. Heelis to hold the next quarterly meeting at Solihull was accepted, and Sir Stewart Stockman was to be asked to give a microscopical and histological demonstration of the methods of diagnosis of the more common contagious diseases of animals in this country.

ELECTION OF OFFICERS.

The HON. SECRETARY, on the recommendation of the Council, proposed that Mr. L. W. Heelis, the senior Vice-President, be elected President of the division for the ensuing year. He said it was a great pleasure to him to make such a proposal, as he had known him since he first entered the profession. Mr. Heelis was an old pupil of his, and had proved an excellent practitioner in every way. It was also to be said of Mr. Heelis that he had always taken an active interest in the affairs of the division, and he was sure they could not find a more eligible man for the chair.

Mr. BROOKE said that, as a friend of Mr. Heelis since his school days, he would like to second the resolution.

This was heartily agreed to, and Mr. HEELIS, in a brief acknowledgment, said he would do his best to merit the great honour which the division had bestowed upon him.

Mr. T. Slipper was appointed senior Vice-President and Mr. S. M. Woodward junior Vice-President, with the retiring President *ex-officio*.

Mr. H. J. Dawes was re-elected Hon. Secretary, Mr. HEELIS remarking that otherwise he should hesitate about accepting the position of President.

Mr. W. H. Brooke was re-elected Hon. Treasurer; Messrs. F. L. Gooch, J. O. Powley and Tudor Hughes were elected auditors; and two vacancies on the Council were filled by the appointment of Mr. B. De Vine and Mr. J. W. Conchie.

Votes of Thanks.—Mr. ASTON moved a vote of thanks to the officers of the division for their services during the past year. The fact that the Midland division continued to progress was evidence that they had done their work well, and the members were all very much indebted to them.

Mr. F. CHAMBERS, in seconding, said the Midland was always looked upon as a real live Society, and that was because their officers were real live men.

The motion having been heartily carried, the PRESIDENT returned thanks on behalf of himself and

the other officers. He said it had given him pleasure to do what little he could for the division during the past year. He entered upon the office with some misgiving, but he had been so loyally supported by the officers that his year of office had been a light and a pleasant one. He specially desired to thank their Secretary for all he had done, and the best thing he could wish his successor was that he receive from the officers the same measure of support that he had done.

"*Dick*" *Centenary Fund.*—Mr. STEELE-BODGER referred to the appeal of the "Dick" Centenary Fund, which now stood at £7,000. Dr. Bradley told him it was to remain open till it reached five figures. Many members of that division had not responded, including some old "Dick" College Students, and he urged them to send a subscription, however small, without delay.

INTERESTING CLINICAL CASES AND POST-MORTEM SPECIMENS.

1.—"INJURY TO THE STERNUM OF A MARE."
2.—"HÆMORRHAGIC SEPTICÆMIA."

Presented by the President of the Association
(Mr. A. B. FORSYTH.)

1. This post-mortem specimen consists of the sternum of a mare, which I had under treatment for some time. The mare when injured was found impaled upon an iron hurdle, sustaining a large lacerated wound, and severe contusions of the sternal region. Under treatment she apparently made good progress for a time; subsequently, however, a number of abscesses developed in the injured area and were followed by the establishment of several sternal fistulæ. Under energetic treatment the affected parts were laid open and curetted; loose bone and necrotic tissues were removed, and a thorough disinfection of the area carried out. With change in the dressings applied temporary healing took place, but no permanent repair could be obtained, and eventually the mare was destroyed, the interesting condition you see here being exposed.

2. I was recently called to attend a bullock which exhibited some rather misleading symptoms. At the time of my examination the bullock had a painful cough associated with a sore throat and vesicles on the tongue, the latter being swollen. He smacked his lips and stringy saliva dribbled from his mouth; compared with the lesions of foot-and-mouth disease the mouth presented a rather dirty appearance. The temperature was 103°, rather lower than I had anticipated. There was a yellowish discharge from the nostrils and some soreness present in the clefts of the fore feet. A swelling soon appeared in the throat and extended forwards to the lower lip and downward to the upper portion of the neck. Deglutition was difficult, but a fair amount of liquid nourishment was taken; the bowels were constipated. The first symptoms began to abate from the fifth to the sixth day, but subsequently abdominal pain and diarrhœa appeared and death took place from muco-enteritis on the ninth day. This case at first raised some suspicion of foot-and-mouth disease, but on examination of the blood I was able to demonstrate the presence of bipolar bacilli, and subsequently treated the case as one of œdematous hæmmorrhagic septicæmia.

"REMOVAL OF TUMOUR AFFECTING THE GLANS PENIS BY EXCISION OF THE PENIS."

(*Presented by* Mr. W. WHITE.)

The subject was a chestnut cob about nine years old.

When brought to my notice I found that the cob had a tumour measuring 6in. by 4in. growing from the glans penis. I decided to remove the tumour by excision of the penis. The animal was cast and anæsthetised. The penis and scrotum were thoroughly cleansed and disinfected, a ligature was applied towards the base of the penis, and a catheter passed a little way beyond the ligature. About one inch behind the tumour on the ventral surface of the penis a triangular incision was made, the base being forward. The tissue in this area was then dissected out down to the urethra, a longitudinal incision was made in the urethral wall the length of the triangular opening and each side of the wall was stitched by fine interrupted sutures to the skin from the base to the apex of the triangle bringing mucous membrane and skin together. The catheter was withdrawn and the penis excised just behind the tumour by a single incision in an upward and forward direction. The wound surface thus exposed was closed by a series of interrupted sutures made with a straight needle which passed through the urethral mucous membrane, the fibrous capsule of the corpus cavernosum, across, but not through the erectile tissue, and brought out through the superior margin of the fibrous capsule, the dorsal vessels and the skin, bringing the mucous membrane and the skin into close contact, closing the blood vessels and leaving no erectile tissue exposed, the whole exposed surface being thus covered by epithelium. The elastic ligature was removed. This was followed by some hæmorrhage which soon ceased, a clot forming at the end of the penis.

The animal was released, and after standing quietly for two hours was walked home a distance of two miles. Four days later I examined the patient finding very little swelling and practically no discharge. Twelve days after the operation the cob returned to hard work.

The tumour weighed 1 lb. 3½ ozs.

"FOOD FOR THOUGHT."

(*Presented by* Mr. W. F. ASTON.)

In these days of interest in womb infections perhaps a few remarks on the sequelæ due to errors of treatment will not be out of place. I trust the stimulus to question and discussion will arise from the brief summary of the two following cases.

The first—a Hereford cow, calved about three weeks, had been treated for retained placenta, and still some mucopurulent metritis existed. It was decided to irrigate without a return flow catheter, and being aware of the danger of such a course, an examination per rectum as to size of womb was made, and the opinion formed that it should be safe to put in a pint at a time and then empty: when a little less than the first pint had been injected the cow showed signs of pain and lay down. Immediately all fluid was removed by siphon and massage. Uterine colic continued for a period of ten days—the cow evincing the usual symptoms of colicy pains, kicking, up and down, very restless, somewhat impaired appetite, but no temperature, and after first day no great increase in pulse rate. No concern was felt as the condition had been experienced before, but not of such long intense duration. Treatment was simple sedative chloral hydrate for first three days. Recovery was satisfactory and conception eventually occurred though there were five or six oestrual periods with only eight-day intervals.

The second was a sterility case due to an endometritis after abortion. Too great a force was employed in irrigating, though only the smallest calibre catheter could be used. The result was a peritoneal abscess, which six days later covered the left side of body of womb, and could be felt as a hard mass the size of a duck egg. No further womb treatment was carried out. I do not suppose the cow ever conceived. Two days after treatment she showed the symptoms of a localised peritonitis, was dull, staring coat, haggard expression, cessation of milk yield and appetite practically in abeyance for six or seven days, with slow recovery to normal and no outward signs of the inward struggle which had take place.

There is a motto—does it need further mention? No force, and always a "return flow" when irrigating a womb.

"Some Historical Notes on the Horse."

(*Presented by* Mr. W. H. Brooke.)

As a variation to the general procedure I thought that a few historical notes showing man's early intimacy with the horse might be acceptable to our members.

The first evidences are met with in the caves and rock-shelters associated with Paleolithic man, both in our own country and in France.

The terms Paleolithic and Neolithic refer, of course, to the Old and New Stone Age respectively, when man's tools and weapons were fashioned almost entirely from flint, and occasionally of bone or deer-antler. The Neolithic or New Stone Age dates approximately from 5,000 to 2,000 B.C. The Paleolithic Age preceded it, and the Bronze and Iron Ages followed it.

A piece of horse's rib found in the cave-shelter at Dordogne, France, was engraved with the figure of a naked man, on either side of which was carved a horse's head. A similar piece with three horses' heads was discovered in the cavern at Bruniquel (Tarne et Garonne); and in our own country at Robin Hood's Cave, Creswell Crag, Derbyshire, a rib was found on which the head of a horse had been incised. These are all of Paleolithic origin, and in each instance the animal depicted is of the small, thick, large-headed type, now represented by the Russian and Western Highland breeds. Many of you no doubt are familiar with pictorial reproductions of these, and they are, although so very, very old, of no mean order of draughtsmanship.

In the Paleolithic rock-shelter of Solutri (Saône et Loire) piles of horse bones were found, of animals ranging from four to six years of age, broken and disjointed and bearing evidences of cooking, which showed that the horse was then a food animal.

Classical references indicate the working horses having been first used for draught purposes, and Turko-Tartaric tribes kept the animal for milk and meat. Tartars of the present day have still a preference for mare's milk.

As a mount, the horse was rarely used in ancient Greece; as such he is only once mentioned by Homer, and at the great fight of Marathon, B.C. 490, although the Persians had cavalry there was no such arm of the Greek army.

Julius Cæsar in his Commentaries mentions the wonderful agility of the British charioteers who, while their vehicle was in full career would run along the pole and fight from the yokes. We have record of an organised Roman horse-race in the reign of Alexander Severus, A.D. 222; and in our own country in Saxon times, the Venerable Bede, whose body rests in Durham Cathedral, writes of parties of young men racing one another on horse-back.

Many British barrow excavations have yielded, in company with the remains of the chief, his chariot and horses. One such was found at Market Weighton, Yorks, in 1876, of the late Celtic period. The horses had been buried in harness, parts of which were found. Several of the Wold burrows gave similar results.

Chariot-burial was practised in Norway and Sweden long into the Christian era, 700 to 1,000 A.D.

At the burial of Bertrand Duquesclin, in 1389 A.D., at St. Denis, several horses were buried with him which had been previously blessed by the bishop.

In the twelfth century Sir Brian de Brampton, buried at the north side of the altar at Malvern Priory, willed that his palfrey, pack-horse and sumpter-mule should be buried with him; and coming down to our own times, Thomas Sheffield, a surgeon of Downton, Wilts, who died in 1798, wished to be buried in his own garden, so that his favourite horse, when he died, might be laid by his side.

When, in 1866, Queen Victoria's huntsman died, his horse was shot and his ears were cut off and placed in the coffin, with the body of his master, who was interred at Sunninghill, Berkshire, and so the ancient customs persist to our own days.

In Plantagenet times, when a great man died, his horse preceded the body at the funeral and was afterwards presented to the Church authorities. This was the case at the burial of Henry the Fifth,

when three horses were so acquired by the Abbey of Westminster.

The Roman historian Tacitus says, in the second half of the first century A.D. that the German tribes held white horses in especial veneration. They were said to convey warnings and even consulted in the launching of projects, the success or failure of which they were supposed to be able to predict.

Virgil records that white horses were not usually worked, since they were beloved of the gods, and it was criminal to wound or kill them except for sacrifice.

In the book of Revelation the white horse symbolised victory and triumph.

The white horse, once the standard of the Saxons, still continues to form a part of the arms of Saxony and Brunswick.

The celebrated white horses cut out on the chalky hillsides at Uffington, Berks, and Bralton Hill, Westbury, Wilts, are said to commemorate victories over the Danes; but are probably much older, as local evidences in the way of barrows and earthworks abound in these districts.

The horse, sacred to Odin, and believed to represent the corn-spirit, was customarily slaughtered at the harvest feast. The last wisp from the cornfield was supposed to be specially the abode of the sacred horse, and even in our own country Professor Frazer tells of quaint harvest customs persisting in Hertfordshire and Shropshire, where the corn-spirit is represented in the shape of a horse.

The Red Indian also propitiates the corn-spirit by the offering of costly horses.

St. Boniface, who christianised much of Germany, was instructed by Pope Gregory III, 731-741 A.D., to condemn the eating of horse-flesh as "an unclean and execrable act," and the consumption of horse-flesh was noted as a stain on the British Christian character at the Council of Celchyth 787 A.D. Hence the horse's comparative disappearance as a food-animal, although for ages before used as such.

The information given is derived from various sources, as will be evident. I have not quoted my authorities, but should be pleased to substantiate the matter offered if desired. I am, however, specially indebted to Mr. Walter Johnson's "Byways in British Archæology," published by the Cambridge University Press, in which much I have mentioned is most ably summarised. If I have been relating what to some of you are old stories, I must ask you to pardon me, but the facts are probably not known to all, and the equine surgeon should beware lest his surgical treatment of the long-sacred animal provoke the spirit of the mighty Odin.

"An Unusual Case of Tuberculosis in the Mare."

(*Presented by* Mr. W. Trigger.)

July, 1920, I was called to Shire brood mare with a very valuable foal at foot. Mare had developed intermittent knuckling over on the near hind fetlock, and it was quite obvious that the gluteal muscles on the near side were atrophied. Treatment by internal administration of pulv. nux vomica and application of embrocation to the gluteal muscles was carried out for several weeks, and eventually after foal was weaned, I applied several smart blisters, and the mare was practically recovered, and was shewn next summer with another foal at foot, and nothing was noticed wrong with her until *March*, 1922. The mare, now barren, developed mastitis, at first affecting the left side of the udder, but eventually extending to both. This trouble proved to be very obstinate, and although eventually I was able to lance the udder and release a considerable quantity of pus, the discharge persisted, and eventually several more small foci appeared. About the end of April the mare began to shew slight but definite disturbing symptoms apart from the udder trouble. Appetite began to be capricious, and the gluteal muscles gradually began to atrophy again; this time on both sides, and in another week or so I began to get definite symptoms of dullness on the left lung. On my advice the owner had the mare destroyed.

Post-mortem revealed tubercular pneumonia of the left lung, a few small nodules in the spleen and liver. The udder when dissected out was in size more like that of a cow, and when cut through shewed a similar picture to a tuberculous udder of a cow, the supra mammary and inguinal glands being as large as an orange and caseous.

Throughout the case there was never the slightest symptom of difficulty in either eating or drinking off the ground, or any evidence to suggest the spleen was affected. I have seen many cases of equine tuberculosis but have never experienced a similar case to this; and I do not recollect that I have ever seen a case of equine tuberculosis in which there were no symptoms of stiffness in the movement of the neck.

1.—"Navicular Disease."
2.—Elephantitis of the Legs of a Dog."
3.—"Scrotal Hernia."

(*Presented by* Mr. Frank Chambers.)

1. Navicular Disease.

On November 22nd last year I was asked to look at a 14 year old cob that was very lame. I found him very lame on the near fore leg, so much so that he could not put the foot to the ground. The history that I obtained was that he had gone lame two weeks before, and the owner, thinking that he was lame in the fetlock, had been applying embrocation to the joint. As the lameness got gradually worse he decided to have the cob examined. It was obvious that the lameness was in the foot. I had the foot searched but could no find trace of nail puncture. Pressure around the sole did not cause any discomfort, but distinct pain was manifested on the sole being tapped with the hammer. I was at a loss to explain the actual cause of the condition. Fracture of one of the bones in the foot could be put out of court on account of the gradual increasing lameness. On November 28th

I advised destruction. Post-mortem revealed extensive necrosis of the navicular bone. Specimen exhibited.

2. Elephantitis of the Legs of a Dog.

In June, 1922, I examined a three-year old retriever dog that was suffering from swollen legs below the knees and hocks. He was not doing very well and the owner was loath to have him destroyed. The condition appeared to be a kind of osteoporosis. Treatment advised was a diet rich in vitamines. Cod liver oil and potassium iodide were administered at intervals. The condition of the legs did not improve, and in November of last year I was asked to go and destroy the dog, as he had become very emaciated. The owner would not allow a post-mortem but was kind enough to allow me to take away one of his fore legs. You will observe that the bones are apparently normal but that there is a deposit of fibrous tissue under the skin very similar to what is seen in man where one gets an elephantitis from infection by the Filaria Bancrofti.

3. Scrotal Hernia.

The specimen exhibited was taken from a seven-year old pit pony that was brought up from the pit suffering from a double scrotal hernia. He was brought out in December, 1923, and, according to the horse keeper, had had three bad attacks of colic (no doubt due to a partial strangulation). The administration of a colic draught had been successful in curing the pony in each case. This in itself is rather remarkable. The tunica vaginalis is very much thickened and shows at its apex deposits of organised lymph. It was adherent over a large area to the skin of the scrotum.

I operated on the pony early in January and he made a good recovery.

"Fracture of the Os Suffraginis under unusual circumstances.
"Spasm of the Diaphragm."
"Hermaphroditism."

(*Presented by* Mr. H. W. Dawes.)

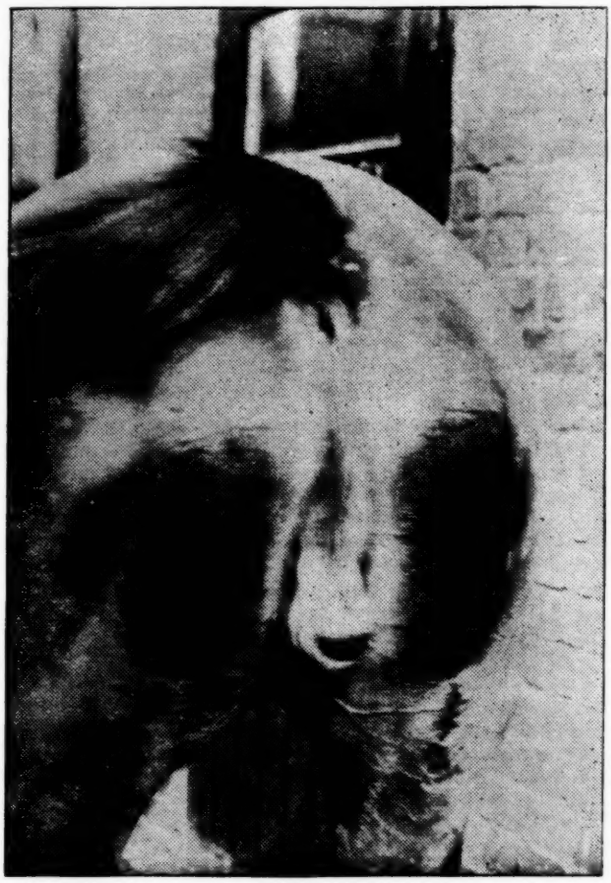
Fracture of the os suffraginis is not in itself an uncommon occurrence, but the history of this case may be of interest. The subject, an aged vanner gelding, had suffered from slight chronic lameness extending over a considerable period, but had been kept at work by palliative measures. With a view to deciding as to whether plantar neurectomy would prove of service, a preliminary injection of one grain of cocaine over each plantar nerve was given. After a short period, the animal was then trotted on a hard road for observation. It was noticed that it went quite sound and moved very freely. A short time after the injection, whilst the animal was in the stable, it was noticed to be extremely lame and holding the injected leg off the ground. When seen next morning the lameness and pain had become aggravated, with a great deal of swelling present in the region of the pastern. In view of the condition and length of service of the animal it was destroyed at once. Post-mortem examination revealed the oblique fracture of the pastern seen in the specimen. The upper end of the os suffraginis showed inflammatory changes with exostosis, and the articular surface of the upper extremity showed arthritic changes.

It is feasible that following the injection of cocaine, the lame animal placed an undue amount of weight upon the diseased limb, and the pastern, having become the seat of rarefying ostitis, failed to support the suddenly increased movement and weight of free action.

Spasm of the diaphragm, the exact etiology of which is not clearly understood, is to-day generally accepted as a reflex neurosis, depending upon some digestive disturbance of the alimentary tract.

The following is of interest in view of the length of time the condition persisted, and the grave symptoms induced in the animal. The suspect, a well-bred four-year old pony, was admitted into infirmary on the morning of the 10th of March. Its condition was one of great distress, severe contraction of the diaphragm occurring every few seconds, together with a convulsive jerking of the whole of the body, and the condition was audible when standing some yards from the animal. The muscles of the limbs twitched and the pony had difficulty in standing. An injection of arecoline was immediately given with a view to clearing out the digestive tract, followed shortly afterwards by injections of large doses of morphia. The condition of the animal remained the same throughout the day and night, and on the morning of the 11th, in spite of the continued administration of morphia, the same distress was present. The spasmodic affection persisted through the day, and diffusible stimulants were given at intervals. On the night of the 11th, the condition of the pony appeared to be hopeless. It was extremely exhausted, pulse feeble and very frequent, and it staggered when moved. On the morning of the 12th, about 11-30 a.m., the condition of the pony suddenly improved, the spasmodic contraction of the diaphragm ceased, and although very exhausted, the animal began to take interest in its surroundings. No recurrence of the condition took place, very careful feeding was instituted, together with the administration of digestive tonics, and the pony was discharged for work on the 16th of March. Since then, it has been in regular work, and at no time has the condition recurred.

The accompanying photograph of an animal recently brought for examination as to soundness is of great interest. It reveals a true condition of hermaphroditism. The vendor of the animal was aware of its condition and described the animal as a mare. Incidentally, I may say that it was a good worker and at no time so far has displayed any vicious tendencies. It will be seen that the commissure of the vulva is closed for its greater length, and at its lower extremity projects a structure analagous to the glans penis. On the upper surface of this is seen the opening of the urethra—the urine is voided through this opening. The penis-like structure is three to four inches in length, and is capable of a limited erection, when it projects from the vulva in an upward



To illustrate Mr. W. H. Dawes' case of Hermaphroditism.

direction. No vagina can be determined. The mammary glands are present, but are not well defined structures, and are situated in the normal position. No trace of testicles can be found, even on rectal examination. but they probably exist in a degenerated form intra-abdominally.

1.—"A Post-Mortem Specimen of Ring Bone."
2.—"An Unusual Condition in a Fowl."
(*Presented by* Mr. J. Robertson.)

1. The post-mortem specimen illustrating ring bone is of particular interest in view of the excellent working history of the animal concerned. My client bought the subject, a strong half-legged horse, six years old, for van work. It was an active animal, an extremely good worker, and trotted sound. The only condition observed by the owner was an enlargement around the fetlock, but at no time did this interfere with its daily work. From time to time it was noticed that the enlargement was progressing until the contour between the fetlock and hoof was entirely obliterated; at this stage the pastern and coronet were absolutely vertically opposed to the ground. After being worked for ten years without, during this period at any time going lame, the animal succumbed to a volvulus of the bowel. It will be noticed that the bony growth has formed a complete osseous ring. In view of the length of service of this horse it is somewhat remarkable that he should have worked practically sound during the whole of this period.

2. The subject of this case was a prize Australorpe Cockerel (Australian Orpington); this bird was imported directly from Australia when two years old; its purchase price being thirty guineas. The owner telephoned me reporting that the cockerel had been off its food for three days, was extremely dull, respirations were of a wheezy nature, and it was noticed to be drinking very little water. The bowels were acting normally. I advised that a small dose of glycerine be administered together with stimulants. The bird, however, died next day, and I was instructed to make a post-mortem examination. The chief lesion was present in the first portion of the duodenum, which was greatly distended with food (about an inch and a quarter in diameter), and the bowel wall seemed to be very friable. The mucous membrane of the bowel showed several diphtheritic patches as seen in the specimen shown; it suggested a typhoid condition. Although some of the symptoms described above are not particularly conclusive one is inclined to think that this was a case of fowl cholera, due to infection with bacillus avisepticus, although apparently none of the characteristic changes in the comb and wattles were present.

"Hæmorrhagic Septicæmia, with Stained Smears of Cultures of the Bacillus Bovisepticus."
(*Presented by* Mr. L. C. Maguire.)

"Tuberculosis of the Cervical Vertebræ of the Horse."
"Excision of a large Tumour from the Vagina of a Cow."
"Disease of the Uterus of a Yorkshire Bitch."
(*Presented by* Mr. F. L. Gooch.)

"Post-Mortem Specimens of Tuberculosis in its various forms: Bacillary Necrosis, Angioma, Actinomycosis, Liver Fluke and the common Parasitic Diseases met with in Meat Inspection."
(*Presented by* Mr. R. P. Holmes.)

"Two Cases of Displacement of the Small Intestine through the Foramen of Winslow."
(*Presented by* Mr. W. J. Dale.)

(*To be continued.*)

The Proposed "Stand-still" Order.

In the House of Commons on March 10th, Captain Terrell (C., Henley) asked whether the Minister had received representations from the agricultural interest in favour of a complete cessation of the movement of stock in this country for at least three weeks with the object of endeavouring to stamp out the disease.

Mr. Buxton (Minister of Agriculture): The reply to the first part is in the affirmative. I am advised, however, that the issue of an Order on the lines suggested would be impracticable, not only from the point of view of the disorganisation of agricultural business which would result, but more especially owing to the great difficulty which would arise in feeding towns and cities with large populations. Moreover, having regard to the fact that infection may be carried by human beings, an Order to restrict the movement of cattle alone would fail to achieve the object desired.

Notes and News.

The Editor will be glad to receive items of professional interest in these columns

Diary of Events.

March 27th—Annual Meeting of the Western Counties Division at Exeter.
April 8th—N.V.M.A. Committee Meetings.
,, 9th—N.V.M.A. Council and Committee Meetings.
,, 10th and 11th—R.C.V.S. Council Meetings.

It is with pleasure we learn of the appointment of Mr. Robert Simpson, F.R.C.V.S., D.V.S.M., as Chief Veterinary Inspector under the Cumberland Agricultural Committee, and hope he will hold the office with much success for many years to come. Mr. Simpson takes a great interest in the National, and especially the Veterinary Inspectors' Section. He was one of the few English representatives to attend the Provisional Committee at Perth, and we look forward with pleasure to seeing him at Aberdeen.

* * * *

Our congratulations also to Mr. H. L. Torrance, D.V.S.M., on his appointment to Birkenhead. This is a new appointment in a large city, and we are sure that Mr. Torrance will do well in it after the experience he has gained at Sheffield, where his work brought him commendation from all with whom he came in contact.

* * * *

The Rugby Inter-collegiate Cup Final was a fine struggle from start to finish, and quite a good game to watch. The R.V.C. students are to be very heartily congratulated on their win and the possession of the fine trophy, and we hope that, having once got it secure in their keeping, they will be able to hold it against all comers next season. We noticed Mr. A. L. Sheather and Mr. L. Pugh amongst the spectators.

* * * *

The General Secretary met the students of the R.V.C. by invitation last week at a meeting of the College V.M.A., and addressed them on the work of the National and the difficulties with which newly-qualified graduates have to contend. He was given a very attentive hearing, and it is hoped that he may have similar opportunities afforded him of meeting students in the future.

* * * *

We congratulate our good friend Mr. J. B. Dier, of East Grinstead, on the successful issue of his action against the horse dealer in a large way of business who sought to "take his name in vain." A full report of this interesting slander case appears elsewhere in the present issue.

Obituary.

MR. RICHARD BURT.

A well-known figure in the town, and a member of one of the longest established families, has, says the *Sussex Daily News*, of March 13th, been removed by the death of Mr. Richard Burt, the well-known Hove veterinary surgeon. Mr. Burt was in his 44th year, and had been in practice since 1901. He came of a long direct line of the same profession, for his great-grandfather was a veterinary surgeon at Albourne 150 years ago, and came to Brighton when the fishing village commenced to take on a fashionable aspect. Mr. Burt was a cousin of Mr. Walter Burt, in practice at Grand Parade, another in the direct line. The deceased gentleman, who lived at 4 Bigwood Avenue, Hove, graduated at London on December 16th, 1901.

MCCALL, JAMES LOCKHART, 66 Dalblair Road, Ayr. Graduated Glasgow, 16th April, 1873. Died 10th March, 1924. Aged 76 years.

FLEETWOOD, CHARLES JOHN, 154 Upholland Road, Billinge, near Wigan. Graduated London, 25th April, 1866. Died 23rd February, 1924. Aged 79.

TAYLOR, JAMES BLACK, "Bon Accord," Waverley, New Zealand. Graduated Edinburgh, 17th April, 1868 Died 14th January, 1924. Aged 76 years.

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.
All correspondence must bear the name and address of the contributor for publication.
The Editor does not hold himself responsible for the opinions of his correspondents.

"Trade Unionism"—and the Register.

TO THE EDITOR OF THE "VETERINARY RECORD."

Sir,—Arising out of your article headed "Trade Unionism and the Veterinary Profession," I would bring to your notice certain facts gained from the 1924 register

(1) Out of twenty-three members of the Board of Examiners for the Membership Diploma, 1923, seven are not veterinary surgeons.

(2) In none of our colleges is physiology taught by a veterinary surgeon.

Further analysis of the lists contained in the register reveals numerous similar instances of "claim jumping."

I would respectfully suggest, sir, that "the bellow of the bull," to which you refer in your picturesque phraseology, be deferred until such time as the profession has set its house in order in these matters so directly affecting our internal economy.—I am, sir, yours faithfully, H. F. MATTHEWS.

113 Woolton Road,
Garston, Liverpool.
8th March, 1924.

The Editor begs to acknowledge the receipt of the following:—

Communications from Messrs. B. H. Benson, W. T. Edwards, J. B. Tutt and Dr O. Cnarnock Bradley.

Report of Lincolnshire and District Division from Mr. H. C Reeks, Hon Secretary

Errata.

The following printer's errors occurred in the paper on "Poultry Diseases," by Captain J. P. Rice, F.R.C.V.S., which appeared in the *Record* of March 8th:—

Page 209, column 1, line 20—"tenallium" should read "tenellum."

Page 209, column 2, line 53—"conjunctional" should read "conjunctival."

Page 212, column 2, line 26—"plants" should read "plant."

Page 212, column 2, line 3—"Argysol" should read "Argyrol."

Page 214, column 1, line 20—"900" should read "1,900."

Page 214, column 1, lines 34 and 35—Delete sentence beginning "In his desire . . ."